

Appendix B

Meteorological Data

This section contains meteorological data derived from various regulatory and non-regulatory sites. The data provides a comparative analysis of winds speed, wind direction, wind gusts and concentration data. Please note that meteorological instruments measure at different heights, and at different time intervals. By taking, the actual time of measurement and assuring that all data represented is in Pacific Standard Time (PST) there is uniformity of the data. In addition, not all stations measure at the exact same time, i.e. measurements at 053 and 056 therefore, comparisons are measurements within a 60-minute period. While there may be some overlapping and slight differences the comparative analysis provides the reader with a better understanding of the regional effect of the Exceptional Event.

FIGURE B-1
POTENTIAL METEOROLOGICAL SITES USED IN EXCEPTIONAL EVENT DOCUMENTS

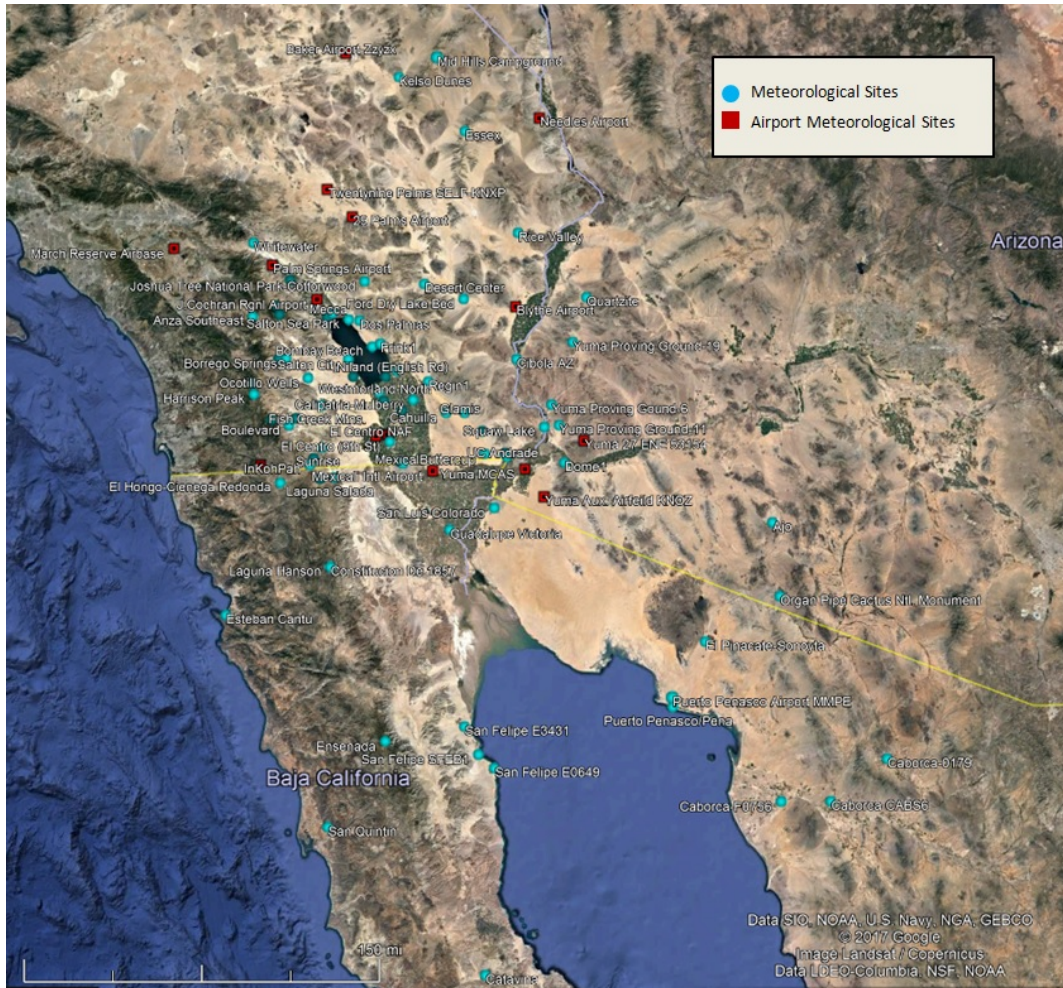
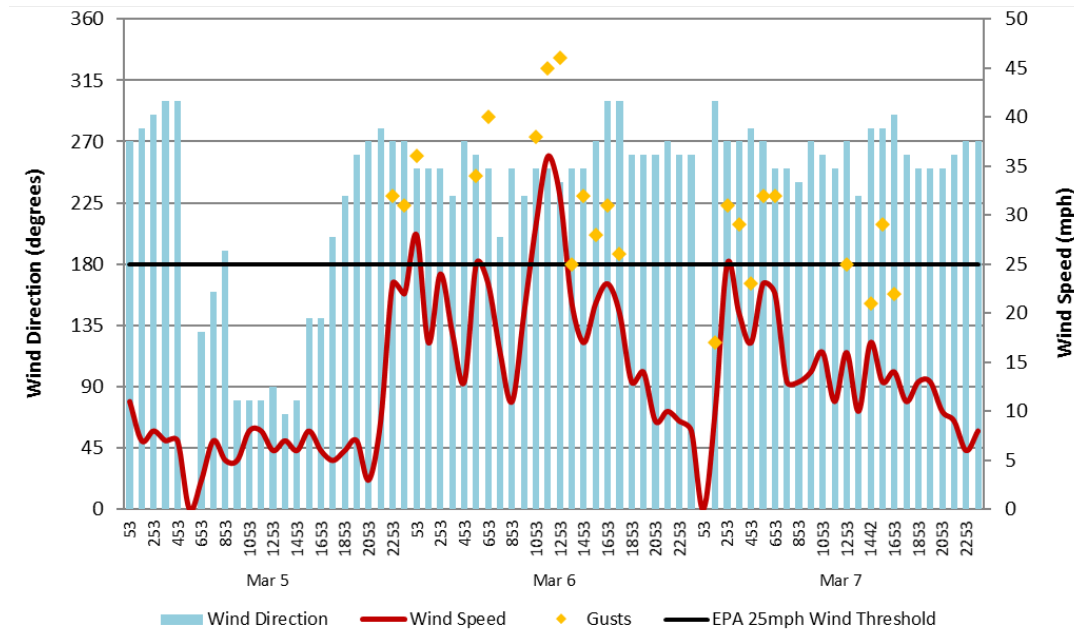


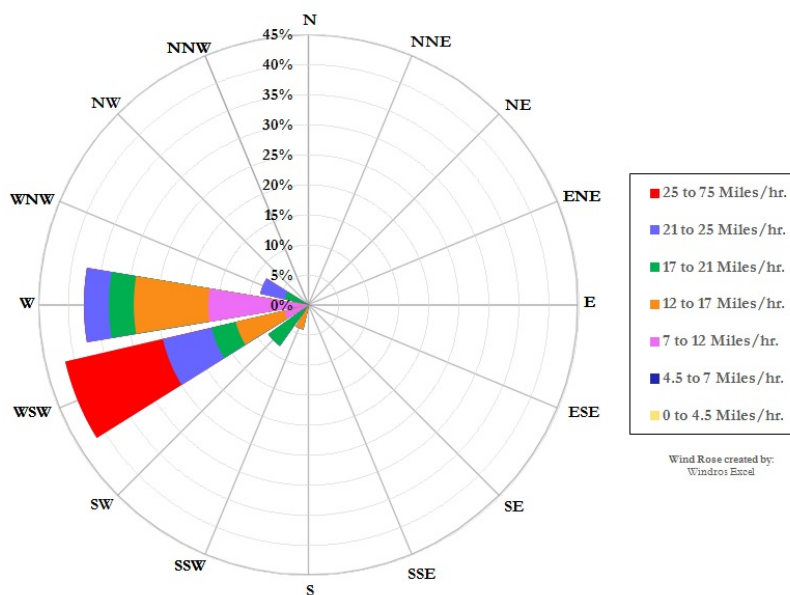
Fig B-1: Depicts all the potential sites from which the ICAPCD may access meteorological data. Base map and larger locator map from Google Earth

**IMPERIAL COUNTY SITES
B-2 THROUGH B-9**

**FIGURE B-2
IMPERIAL COUNTY AIRPORT (KIPL)
WIND SPEED, GUSTS & DIRECTION**

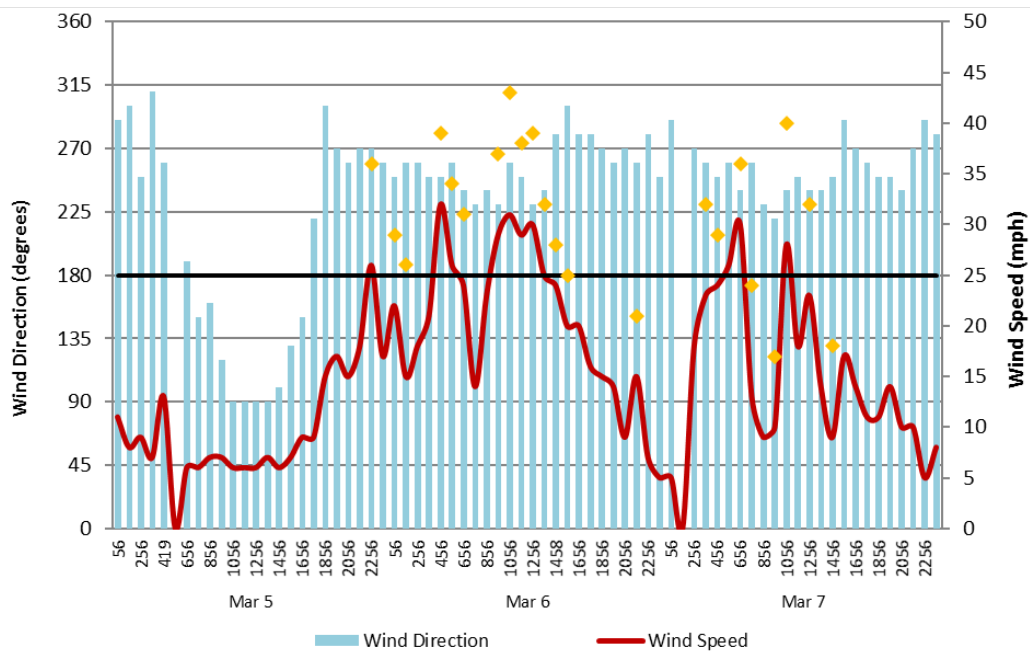


**FIGURE B-3
KIPL WIND ROSE - MARCH 6, 2016**

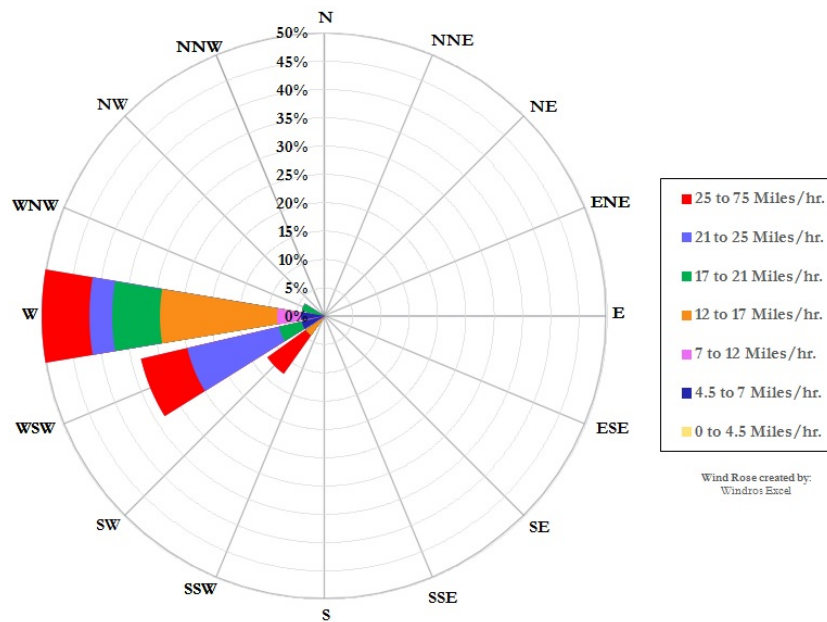


Figs B-2 & B-3: Imperial Airport (KIPL) meteorological data shows winds and gusts exceeded the 25 mph wind threshold on March 6, 2016. Data from the NCEI's QCLCD system

**FIGURE B-4
EL CENTRO NAF (KNJK)
WIND SPEED & DIRECTION**

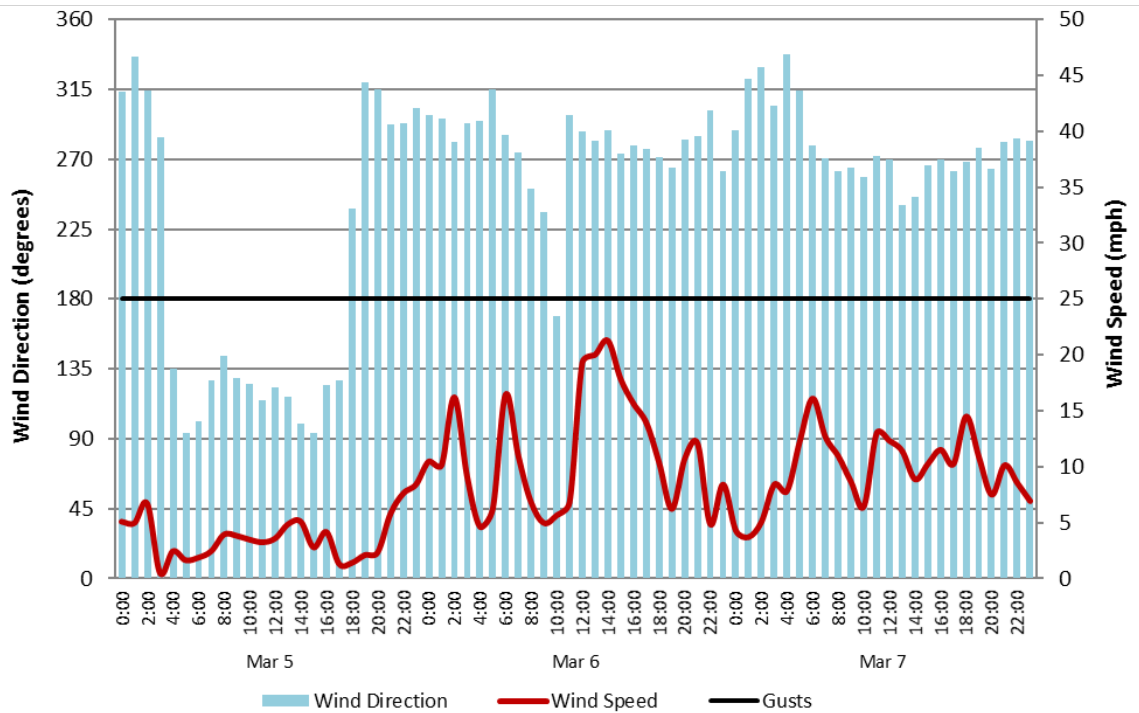


**FIGURE B-5
KNJK WIND ROSE - MARCH 6, 2016**



Figs B-4 & B-5: El Centro NAF meteorological data shows winds were strong early in the morning, and continued to increase along with gusts, later into the day. Data from the NCEI's QCLCD system

**FIGURE B-6
CALEXICO
WIND SPEED & DIRECTION**



**FIGURE B-7
CALEXICO WIND ROSE - MARCH 6, 2016**

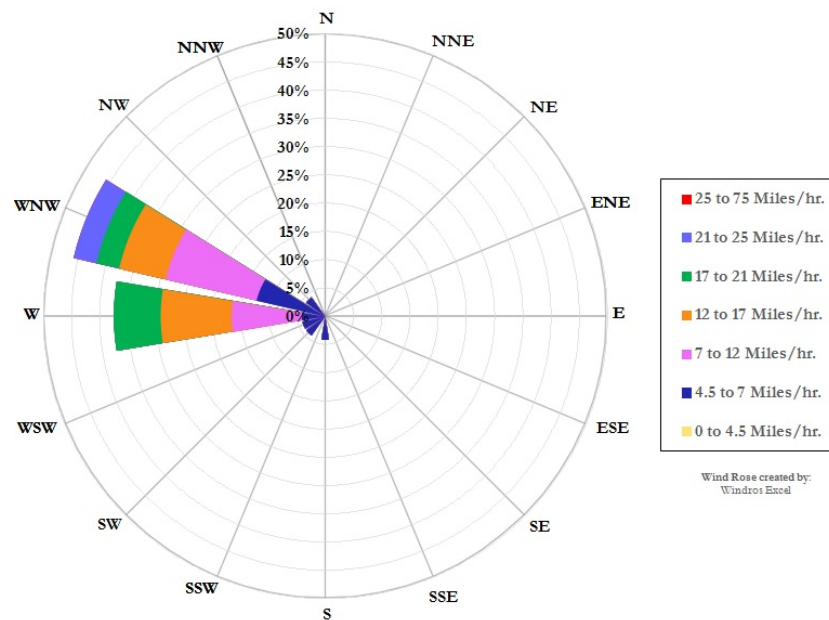
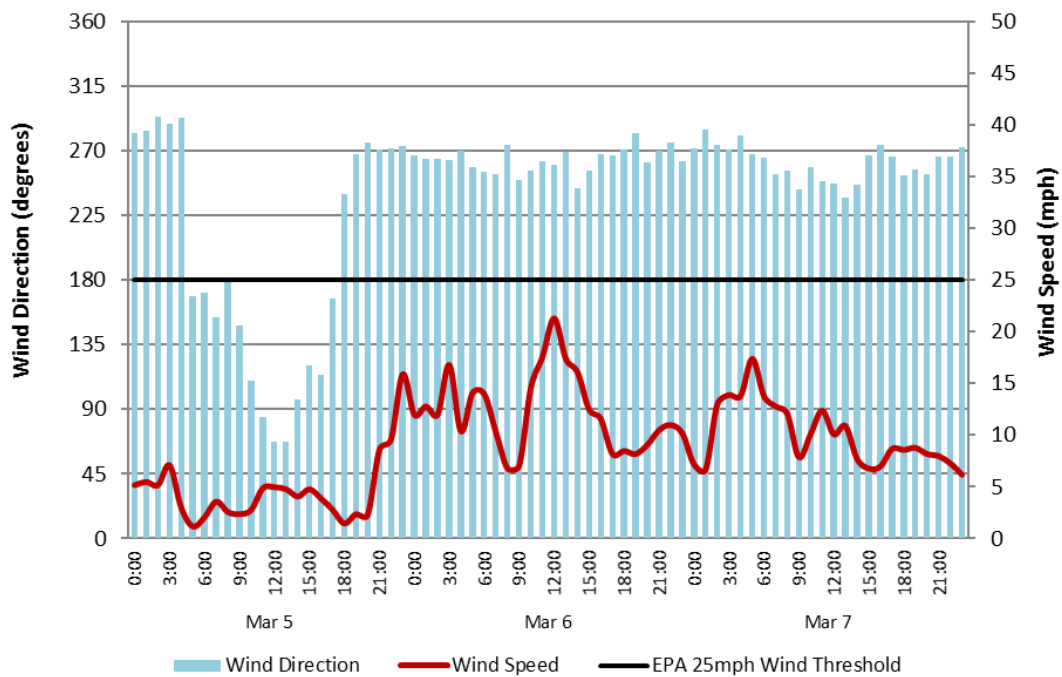


Fig B-6 & B-7: Wind at Calexico did not surpass the 25 mph wind threshold as it did at stations farther north. Wind data from the EPA's AQS data bank

**FIGURE B-8
EL CENTRO
WIND SPEED & DIRECTION**



**FIGURE B-9
EL CENTRO (9th St) WIND ROSE MARCH 6, 2016**

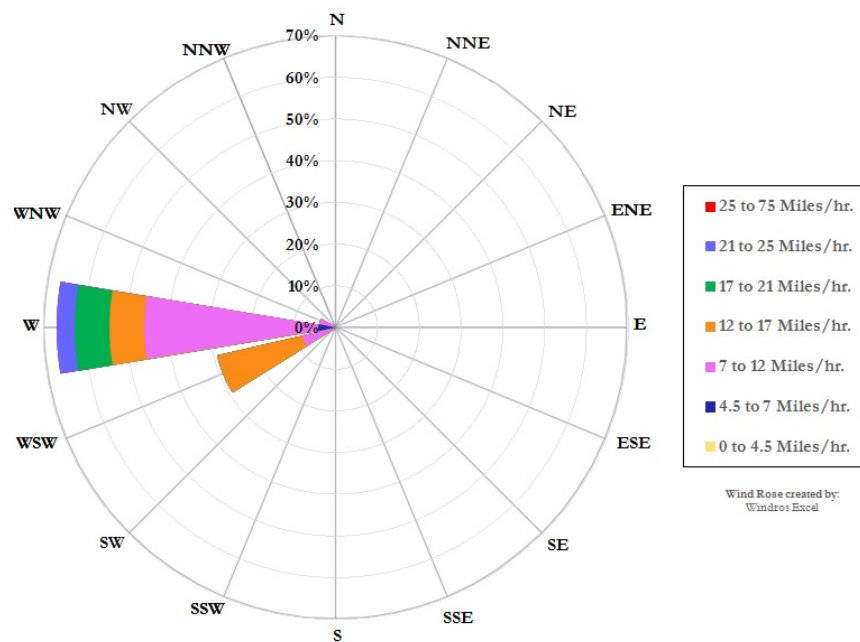


Fig B-8 & B-9: Wind at El Centro (9th St) did not surpass the 25 mph wind threshold as it did at stations farther north. Wind data from the EPA's AQS data bank

FIGURE B-10
NILAND WIND SPEED & DIRECTION

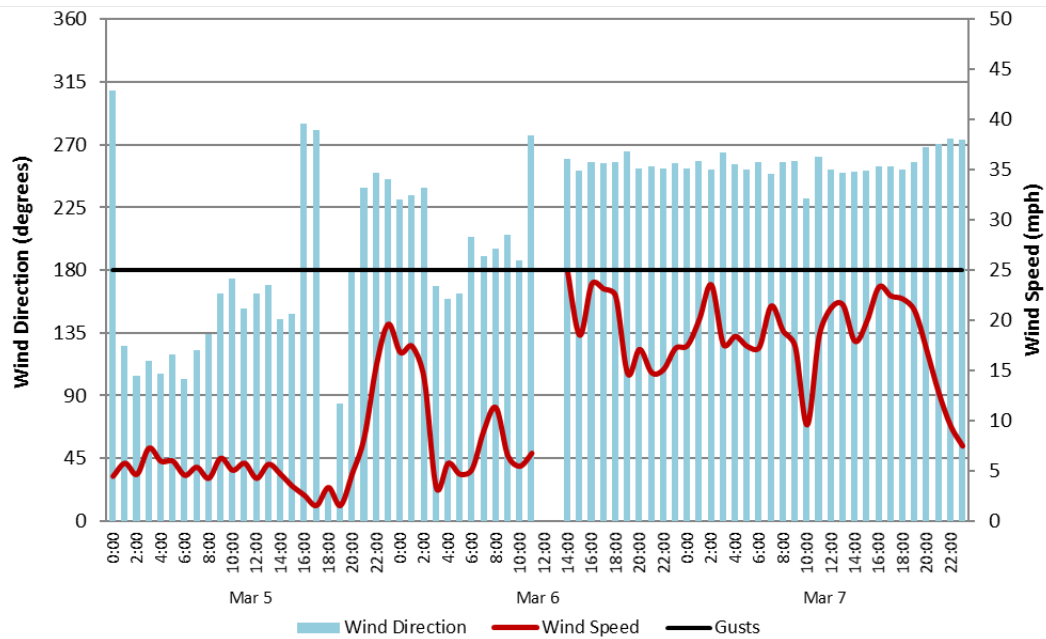


FIGURE B-11
NILAND WIND ROSE - MARCH 6, 2016

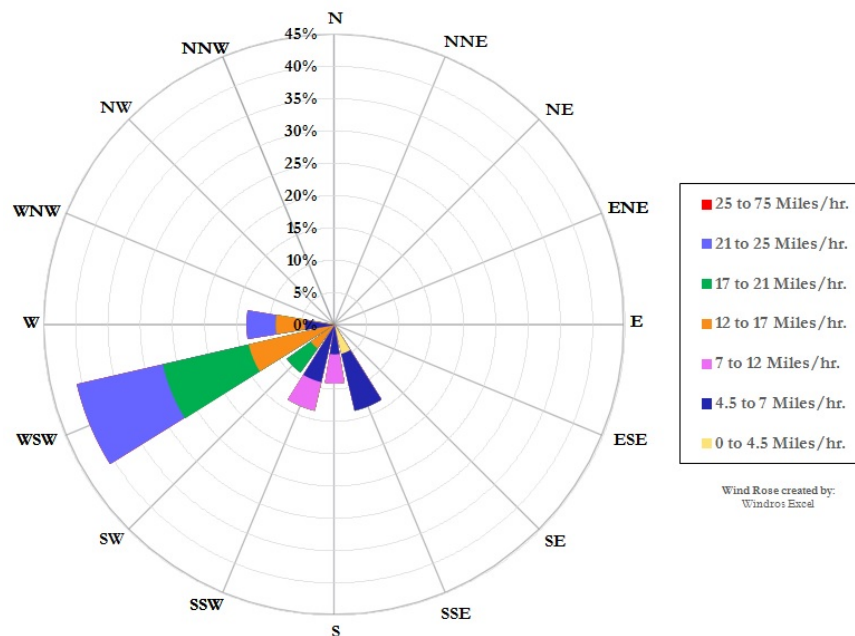


Fig B-10 & B-11: Wind at Niland likely surpassed the 25 mph wind threshold, but data is missing during critical hours due to a power failure. Wind data from the EPA's AQS data bank

FIGURE B-12
WESTMORLAND
WIND SPEED & DIRECTION

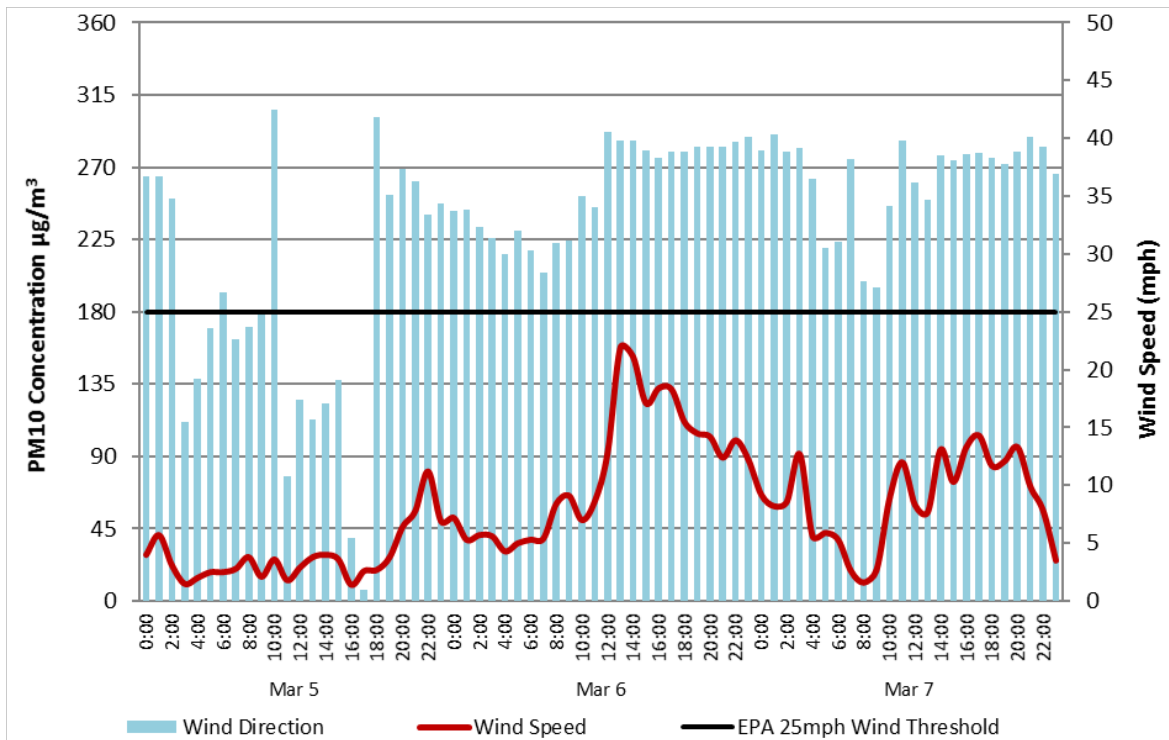


FIGURE B-13
WESTMORLAND WIND ROSE - MARCH 6, 2016

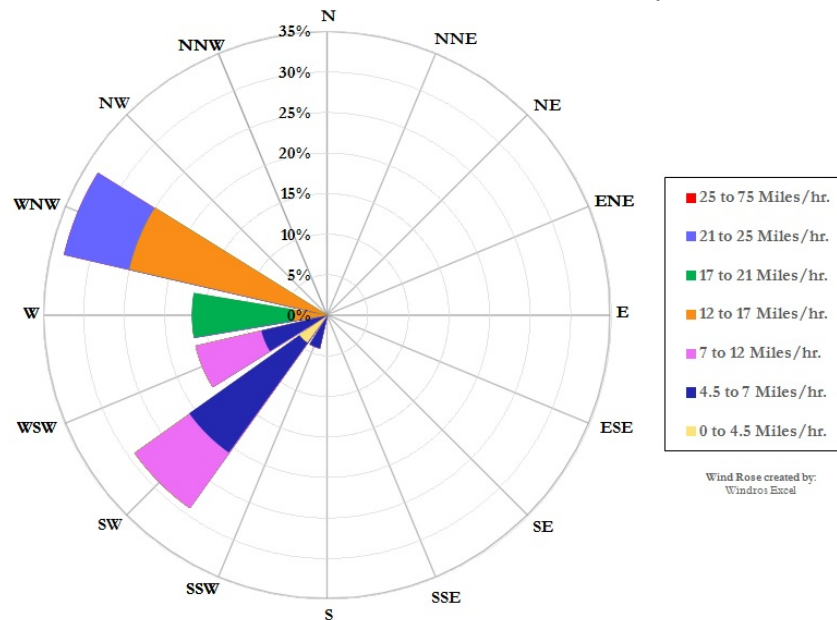


Fig B-12 & B-13: Wind at Westmorland came close to surpassing the 25 mph wind threshold. Wind data from the EPA's AQS data bank

EASTERN RIVERSIDE COUNTY SITES

FIGURE B-14
PALM SPRINGS INTERNATIONAL AIRPORT (KPSP)
WIND SPEED, GUSTS & DIRECTION

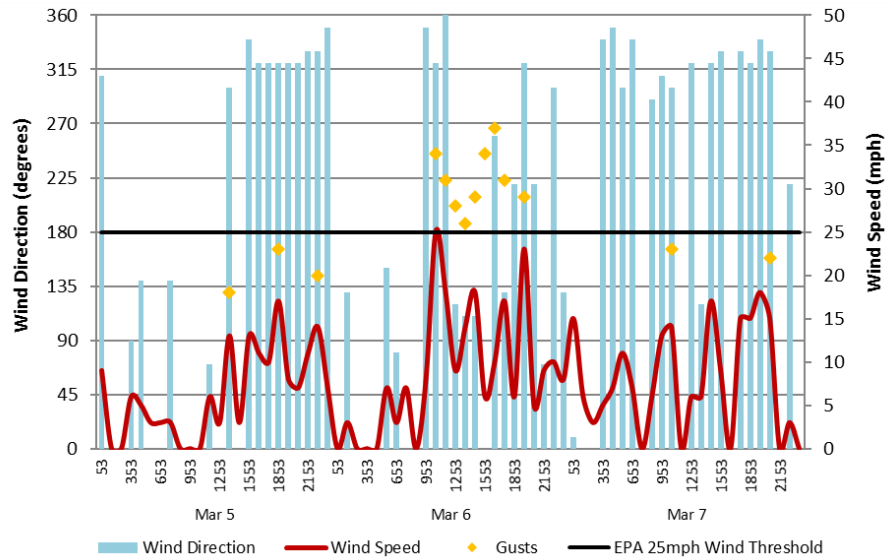


Fig B-14: Wind at Palm Springs Airport came close to surpassing the 25 mph wind threshold while gusts did do so. Wind data from the NCEI's QCLCD data bank

FIGURE B-15
DESERT RESORTS (aka J.COCHRAN-THERMAL) AIRPORT (KTRM)
WIND SPEED, GUSTS & DIRECTION

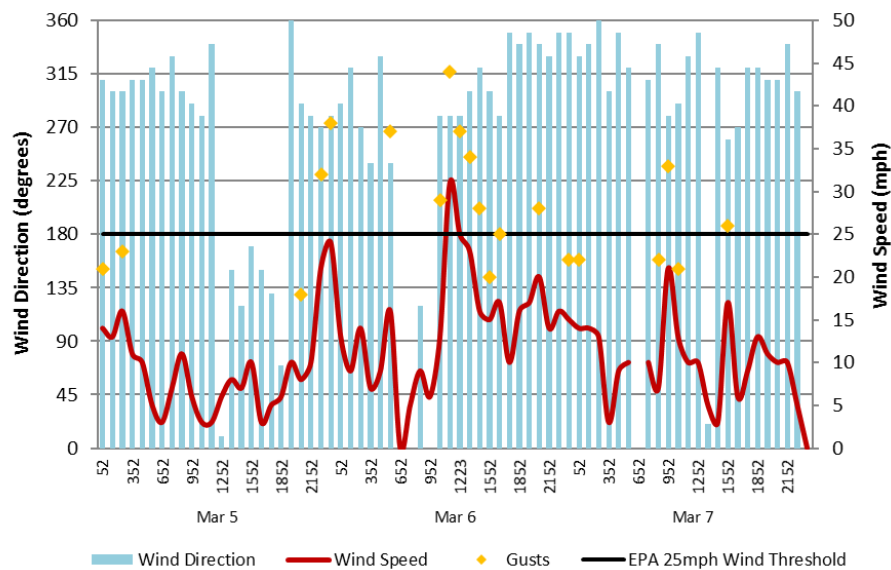


Fig B-15: Wind at KTRM surpassed the 25 mph wind threshold. Wind data from the NCEI's QCLCD data bank

FIGURE B-16
BLYTHE AIRPORT (KBLH)
WIND SPEED, GUSTS & DIRECTION

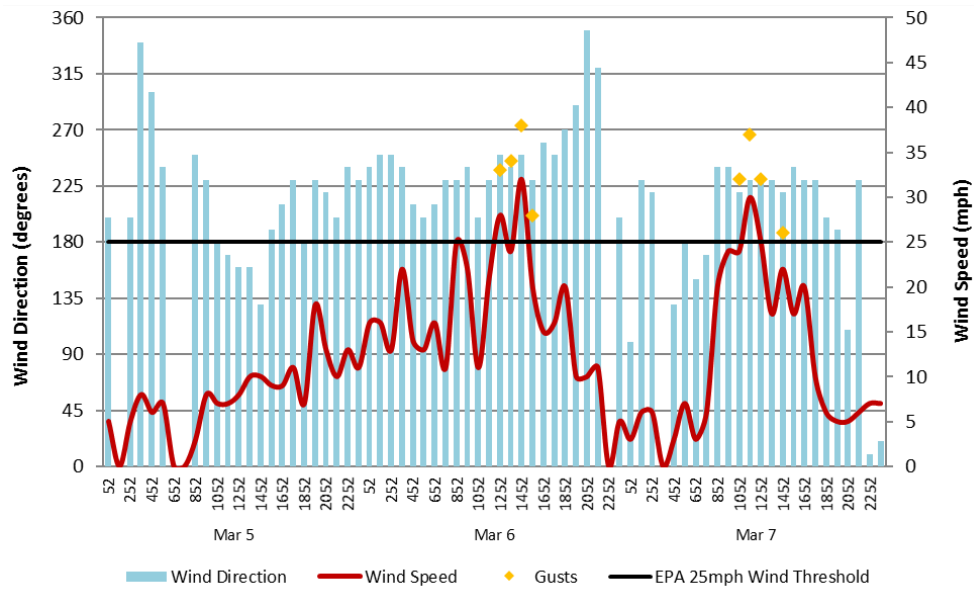


Fig B-16: Wind and gusts at KBLH surpassed the 25 mph wind threshold. Wind data from the NCEI's QCLCD data bank

FIGURE B-17
TORRES-MARTINEZ TRIBAL
WIND SPEED & DIRECTION

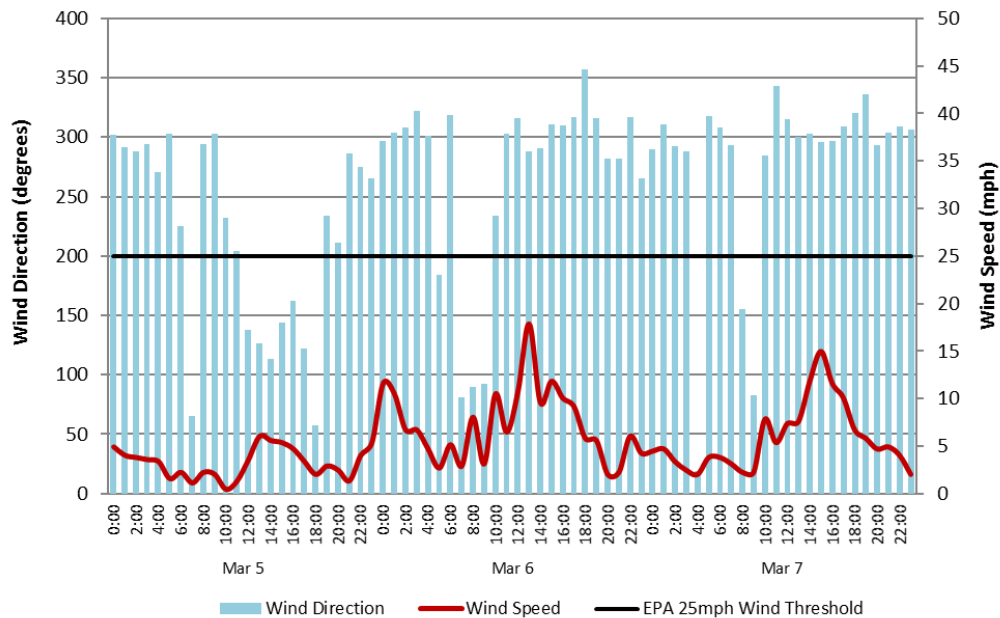


Fig B-17: Winds at the Torres-Martinez Desert Cahuilla Indians Reservation did not surpass the 25 mph wind threshold. Wind data from AQMIS

SOUTHEASTERN SAN DIEGO COUNTY

FIGURE B-18
CAMPO AIRFIELD (KCZZ)
WIND SPEED, GUSTS & DIRECTION

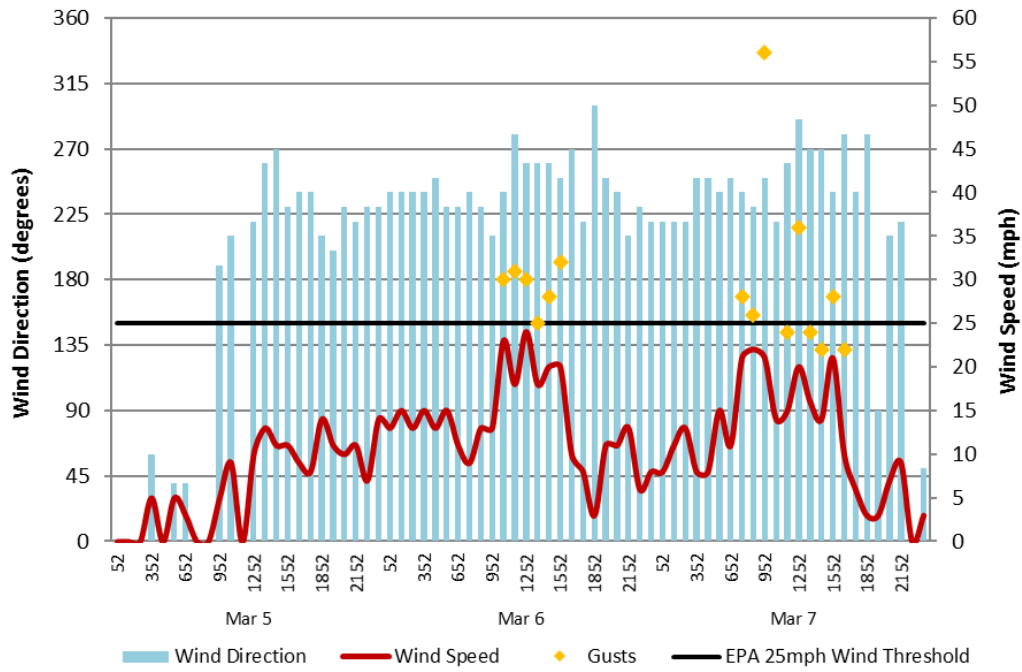


Fig B-18: Wind gusts at KCZZ surpassed the 25 mph wind threshold. Wind data from the NCEI's QCLCD data bank

SOUTHWESTERN ARIZONA COUNTY

FIGURE B-19
YUMA, ARIZONA MCAS (KNYL)
WIND SPEED, GUSTS & DIRECTION

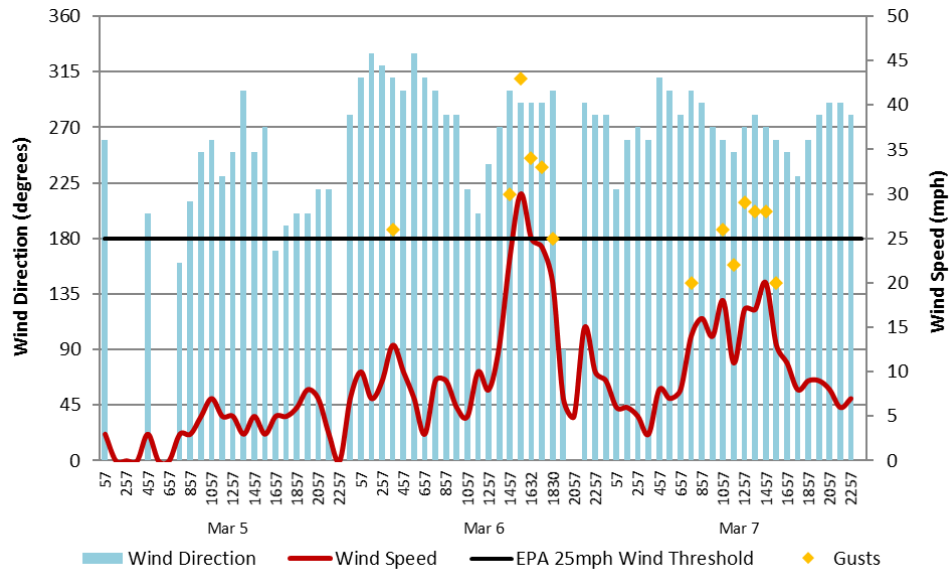


Fig B-19: Winds and gusts at KNYL surpassed the 25 mph wind threshold. Wind data from the NCEI's QCLCD data bank

FIGURE B-20
MEXICALI, MEXICO INTERNATIONAL AIRPORT (MMML)
WIND SPEED & DIRECTION

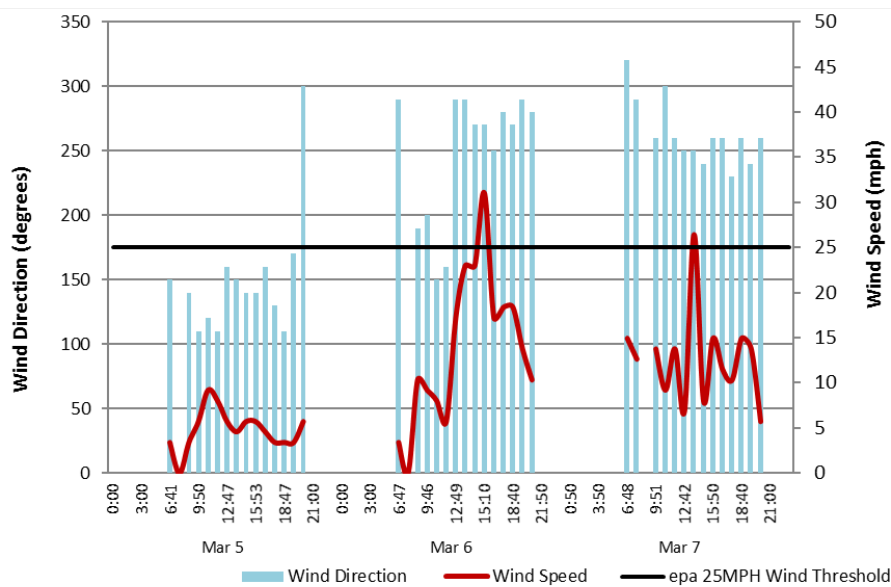
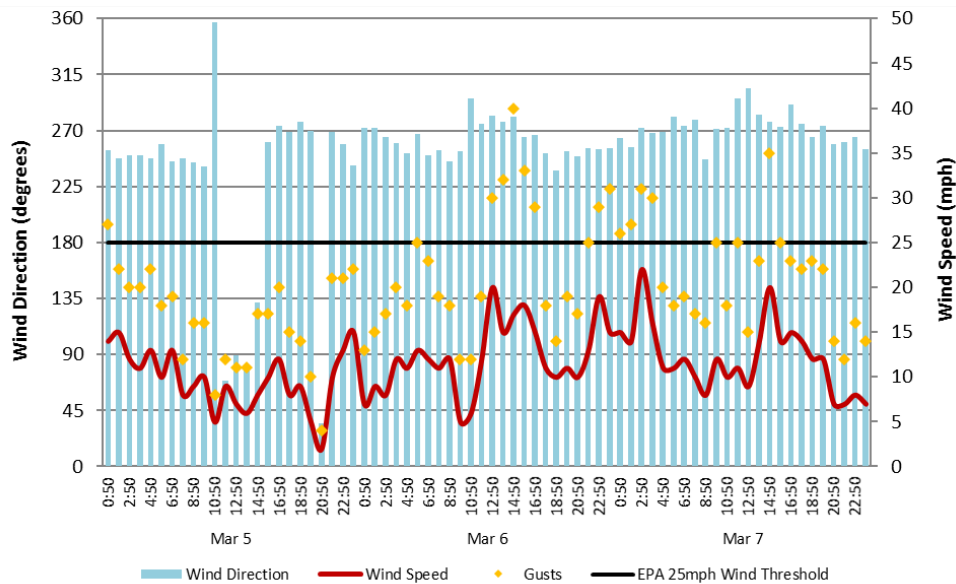


Fig B-20: Winds at MMML surpassed the 25 mph wind threshold. Data from the University of Utah's MesoWest system

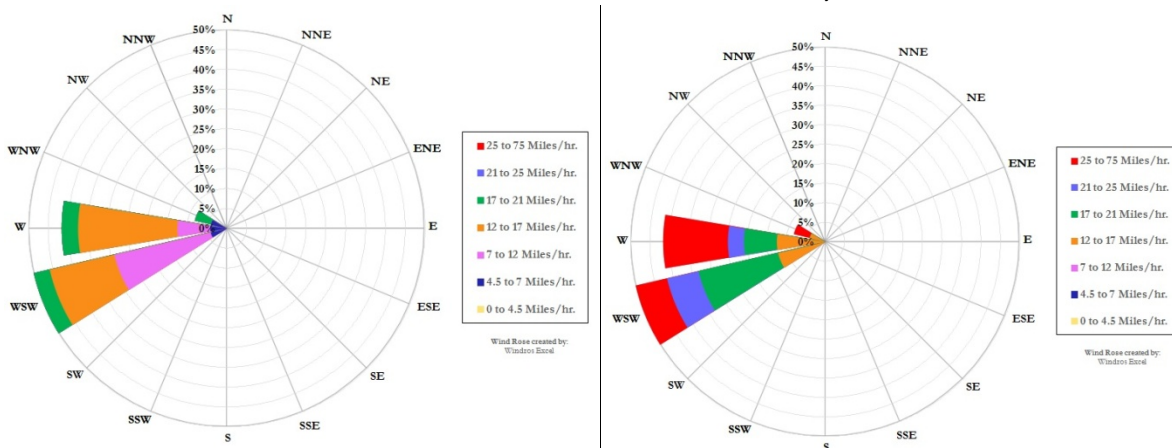
UPSTREAM SITES

The following graphs provide evidence of the elevated wind speeds and confirm the prevailing wind direction at different sites upstream from Brawley during the March 6, 2016 wind event. See map in **Figure B-1**. These two sites provide the only reliable wind data in the area.

FIGURE B-21
SUNRISE-OCOTILLO
WIND SPEED, GUSTS & DIRECTION

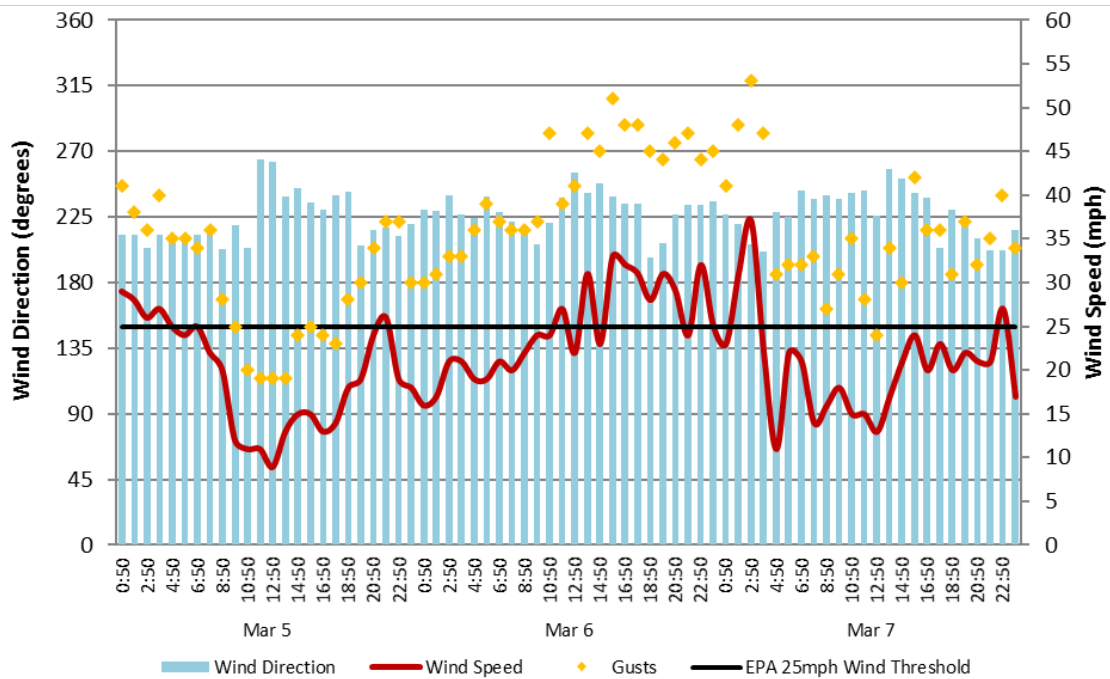


FIGURES B-22 & B-23
SUNRISE-OCOTILLO WIND ROSES - MARCH 6, 2016



Figs B-21, B-22 & B-23: Wind gusts at Sunrise-Ocotillo (MesoWest Station ID: IMPSD) surpassed the 25 mph wind threshold. The wind roses show the difference between winds (Fig. B-22, left) and gusts (Fig. B-23, right). Sunrise-Ocotillo is near the desert floor (elev. 695 ft). Wind data from the University of Utah's MesoWest

FIGURE B-24
MOUNTAIN SPRINGS GRADE
WIND SPEED, GUSTS & DIRECTION



Figs B-24 & B-25: Winds and gusts at Mountain Springs Grade (MesoWest Station ID: TNSC1) surpassed the 25 mph wind threshold. Mountain Springs Grade is on the desert slopes near the San Diego-Imperial County border (elev. 2044 ft). Wind data from the University of Utah's MesoWest

FIGURE B-25
MOUNTAIN SPRINGS GRADE WIND ROSE - MARCH 6, 2016

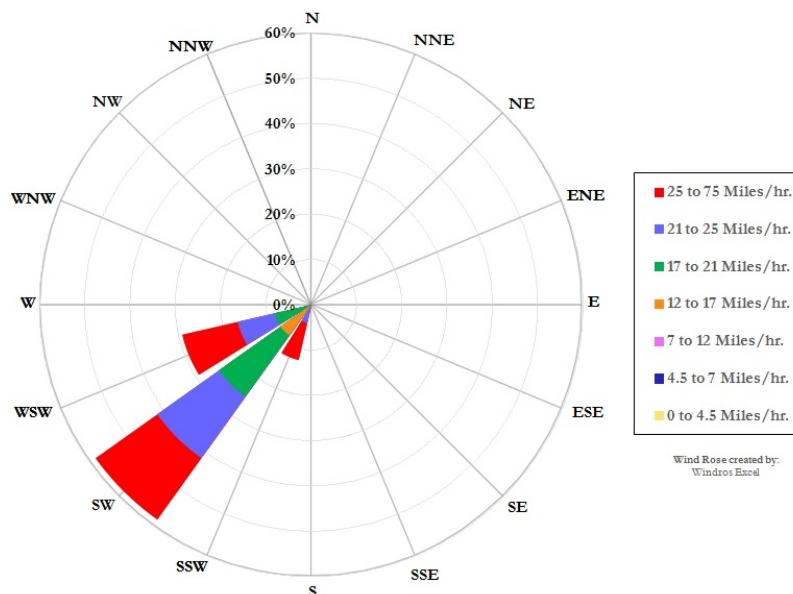


FIGURE B-26
FISH CREEK MOUNTAINS
WIND SPEED, GUSTS & DIRECTION

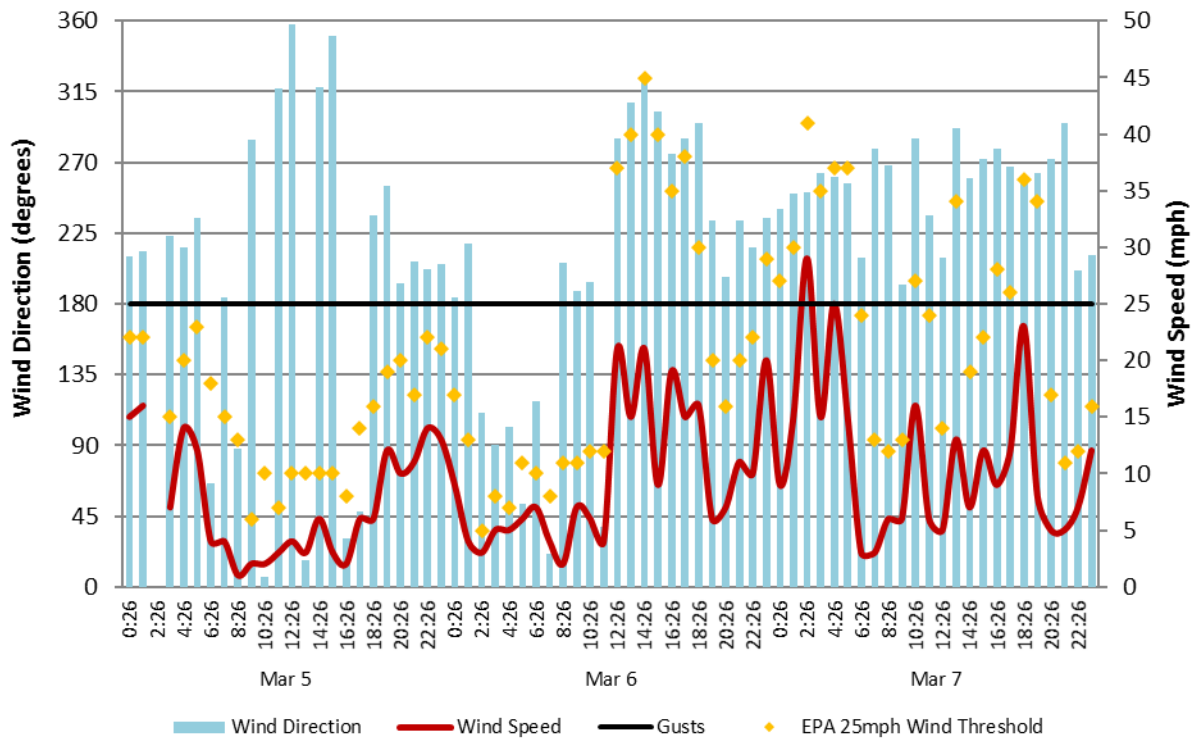
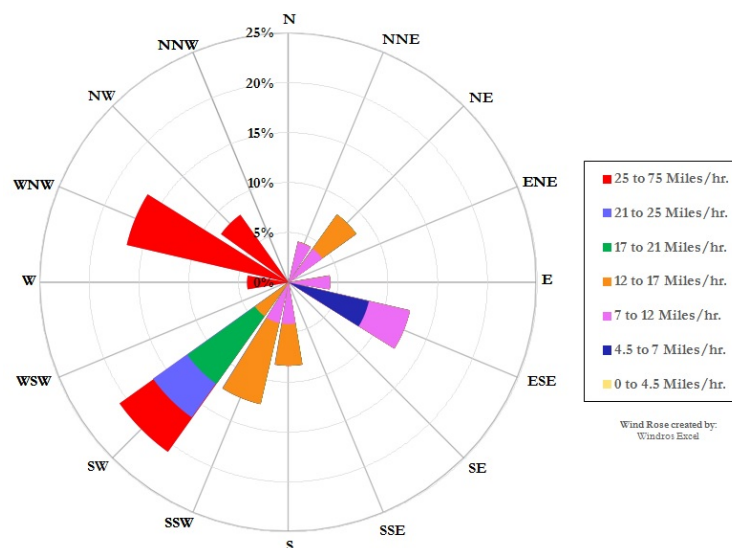


FIGURE B-27
FISH CREEK MOUNTAINS WIND ROSE (GUSTS ONLY) MARCH 6, 2016



Figs B-26 & B-27: Wind gusts at the Fish Creek Mountains (MesoWest Station ID: FHCC1) surpassed the 25 mph wind threshold. The Fish Creek Mountains site is near the desert floor (elev. 781 ft). Wind data from the University of Utah's MesoWest

FIGURE B-28 IMPERIAL COUNTY AIRPORT (KIPL) QCLCD DATA

U.S. Department of Commerce
National Oceanic & Atmospheric Administration
National Environmental Satellite, Data, and Information Service
Elev: -58 ft. Lat: 32.8342° N Lon: -115.5786° W
Station: **IMPERIAL CO AIRPORT, CA US WBAN:03144**

Local Climatological Data Hourly Observations March 2016

Generated on 05/11/2017

National Centers for Environmental Information
151 Patton Avenue
Asheville, North Carolina 28801

Date	Time (LST)	Station Type	Sky Conditions	Visi- bility	Weather Type (see documentation) AU AW MW	Dry Bulb Temp		Wet Bulb Temp		Dew Point Temp		Rel Hum %	Wind Speed (MPH)	Wind Dir (Deg)	Wind Gusts (MPH)	Station Press (inHg)	Press. Tend	Net 3-Hr Change (inHg)	Sea Level Press. (inHg)	Report Type	Precip Total (in)	Alti-meter Setting (inHg)
						(F)	(C)	(F)	(C)	(F)	(C)											
06	0053	7	CLR:00	10.00		70	21.1	61	16.1	50	10.0	49	28	250	36	29.98		+0.01	29.92	FM-15	0.00	29.92
06	0153	7	CLR:00	10.00		70	21.1	61	16.1	50	10.0	49	17	250		30.00			29.94	FM-15	0.00	29.94
06	0253	7	CLR:00	10.00		68	20.0	59	15.2	49	9.4	51	24	250		29.97			29.91	FM-15	0.00	29.91
06	0353	7	CLR:00	10.00		68	20.0	59	15.1	48	8.9	49	18	230		29.97	8	+0.01	29.91	FM-15	0.00	29.91
06	0453	7	CLR:00	10.00		66	18.9	57	14.0	45	7.2	47	13	270		29.95			29.89	FM-15	0.00	29.89
06	0553	7	CLR:00	10.00		66	18.9	57	14.0	45	7.2	47	25	260	34	29.96			29.90	FM-15	0.00	29.90
06	0653	7	CLR:00	10.00		66	18.9	57	14.0	45	7.2	47	23	250	40	29.97	3	-0.01	29.91	FM-15	0.00	29.91
06	0753	7	CLR:00	10.00		69	20.6	60	15.4	45	7.2	42	16	200		29.97			29.91	FM-15	0.00	29.91
06	0853	7	CLR:00	10.00		72	22.2	62	16.8	45	7.2	38	11	250		29.96			29.90	FM-15	0.00	29.90
06	0953	7	CLR:00	10.00		73	22.8	63	17.3	46	7.8	38	20	230		29.94	8	+0.03	29.88	FM-15	0.00	29.88
06	1053	7	FEW:02 90	9.00		77	25.0	67	19.3	50	10.0	39	29	250	38	29.92			29.86	FM-15	0.00	29.86
06	1153	7	CLR:00	5.00	HZ:7 FU:05 HZ:05	77	25.0	67	19.3	48	8.9	36	36	250	45	29.91			29.84	FM-15	0.00	29.85
06	1253	7	CLR:00	5.00	HZ:7 FU:05 HZ:05	77	25.0	67	19.4	46	7.8	33	32	240	46	29.89	6	+0.06	29.83	FM-15	0.00	29.83
06	1353	7	BKN:07 70 OVC:08 95	10.00		74	23.3	64	17.8	46	7.8	37	21	250	25	29.92			29.86	FM-15	0.00	29.86
06	1453	7	CLR:00	10.00		75	23.9	66	19.1	38	3.3	26	17	250	32	29.91			29.85	FM-15	0.00	29.85
06	1509	7	BKN:07 22	1.75	HZ:7 FU:05 HZ:05	74	23.3	66	18.9	35	1.7	24	14	280	21	29.90				FM-16		29.84
06	1521	7	BKN:07 20	1.25	HZ:7 FU:05 HZ:05	74	23.3	66	19.0	34	1.1	23	10	250		29.90				FM-16		29.84
06	1525	7	BKN:07 22 OVC:08 30	2.00	HZ:7 FU:05 HZ:05	75	23.9	68	19.9	33	0.6	22	11	290		29.90				FM-16		29.84
06	1535	7	OVC:08 24	4.00	HZ:7 FU:05 HZ:05	75	23.9	67	19.5	35	1.7	23	14	260	21	29.89				FM-16		29.83
06	1548	7	BKN:07 30	10.00		75	24.0	68	20.1	32	0.0	21	21	270	28	29.88				FM-16		29.82
06	1553	7	SCT:04 32	10.00		74	23.3	66	18.9	35	1.7	24	17	250	28	29.89	5	+0.04	29.83	FM-15	0.00	29.83
06	1623	7	BKN:07 23 BKN:07 35	3.00	HZ:7 FU:05 HZ:05	73	22.8	65	18.1	36	2.2	26	15	300	23	29.91				FM-16		29.85
06	1641	7	SCT:04 25 SCT:04 36	10.00		73	22.8	66	18.7	32	0.0	22	20	290	26	29.90				FM-16		29.84
06	1653	7	FEW:02 27	9.00		72	22.2	64	17.7	34	1.1	25	23	300	31	29.90			29.84	FM-15	0.00	29.84
06	1713	7	BKN:07 26	4.00	HZ:7 FU:05 HZ:05	71	21.7	63	17.4	32	0.0	24	20	300	26	29.91				FM-16		29.85
06	1743	7	SCT:04 31	9.00		69	20.6	61	16.1	32	0.0	25	17	290		29.91				FM-16		29.85
06	1753	7	FEW:02 35	10.00		68	20.0	60	15.5	32	0.0	26	10	290		29.92			29.86	FM-15	0.00	29.86
06	1853	7	CLR:00	10.00		65	18.3	57	13.7	32	0.0	29	13	260		29.91	0	-0.02	29.85	FM-15	0.00	29.85
06	1953	7	CLR:00	10.00		63	17.2	55	12.5	33	0.6	33	14	260		29.92			29.86	FM-15	0.00	29.86
06	2053	7	CLR:00	10.00		60	15.6	52	11.0	38	3.3	44	9	260		29.94			29.88	FM-15	0.00	29.88
06	2153	7	CLR:00	10.00		58	14.4	50	10.2	39	3.9	50	10	270		29.96	3	-0.05	29.90	FM-15	0.00	29.90
06	2253	7	CLR:00	10.00		56	13.3	49	9.4	39	3.9	53	9	260		29.97			29.91	FM-15	0.00	29.91
06	2353	7	CLR:00	10.00		57	13.9	49	9.5	34	1.1	42	8	260		29.96			29.90	FM-15	0.00	29.90

FIGURE B-29 EL CENTRO NAF (KNJK) QCLCD DATA

U.S. Department of Commerce
National Oceanic & Atmospheric Administration
National Environmental Satellite, Data, and Information Service
Elev: -42 ft. Lat: 32.8167° N Lon: -115.6833° W
Station: **EL CENTRO NAF, CA US WBAN:23199**

Local Climatological Data Hourly Observations March 2016

Generated on 05/11/2017

National Centers for Environmental Information
151 Patton Avenue
Asheville, North Carolina 28801

Date	Time (LST)	Station Type	Sky Conditions	Visi- bility	Weather Type (see documentation) AU AW MW	Dry Bulb Temp		Wet Bulb Temp		Dew Point Temp		Rel Hum %	Wind Speed (MPH)	Wind Dir (Deg)	Wind Gusts (MPH)	Station Press (inHg)	Press. Tend	Net 3-Hr Change (inHg)	Sea Level Press. (inHg)	Report Type	Precip Total (in)	Alti-meter Setting (inHg)
						(F)	(C)	(F)	(C)	(F)	(C)											
06	0056	7	CLR:00	10.00	-RA:02 RA:61	69	20.6	60	15.6	49	9.4	49	22	250	29	30.02	1	-0.02	30.02	FM-15	T	29.98
06	0156	7	CLR:00	10.00	-RA:02 RA:61	69	20.6	60	15.6	49	9.4	49	15	260	26	30.00			30.00	FM-15	T	29.96
06	0256	7	CLR:00	10.00		67	19.4	58	14.7	48	8.9	51	18	260		29.97			29.98	FM-15	T	29.93
06	0356	7	CLR:00	10.00	-RA:02 RA:61	67	19.4	58	14.6	47	8.3	49	21	250		29.96	6	+0.05	29.97	FM-15	T	29.92
06	0456	7	CLR:00	10.00	-RA:02 RA:61	67	19.4	58	14.4	43	6.1	42	32	250	39	29.96			29.97	FM-15	T	29.92
06	0556	7	CLR:00	10.00	-RA:02 RA:61	66	18.9	57	14.1	45	7.2	47	26	260	34	30.00			30.00	FM-15	T	29.96
06	0656	7	CLR:00	10.00	-RA:02 RA:61	65	18.3	56	13.6	44	6.7	47	24	240	31	29.99	2	-0.03	30.00	FM-15	T	29.95
06	0756	7	FEW:02 110	10.00		66	18.9	57	14.0	45	7.2	47	14	230		29.98			29.98	FM-15	T	29.94
06	0856	7	CLR:00	10.00	-RA:02 RA:61	73	22.8	63	17.3	45	7.2	37	23	240		29.96			29.97	FM-15	T	29.92
06	0956	7	SCT:04 80	10.00	-RA:02 RA:61	72	22.2	62	16.8	47	8.3	41	29	230	37	29.96	6	+0.04	29.96	FM-15	T	29.92
06	1056	7	CLR:00	10.00	-RA:02 RA:61	77	25.0	67	19.4	47	8.3	35	31	260	43	29.95			29.96	FM-15	T	29.91
06	1156	7	FEW:02 100 SCT:04 110	10.00	-RA:02 RA:61	77	25.0	67	19.4	47	8.3	35	29	250	38	29.95			29.95	FM-15	T	29.91
06	1256	7	SCT:04 90 BKN:07 110	10.00	-RA:02 RA:61	76	24.4	66	18.9	45	7.2	33	30	230	39	29.93	8	+0.03	29.93	FM-15	T	29.89
06	1356	7	FEW:02 80	10.00	-RA:02 RA:61	75	23.9	65	18.5	44	6.7	33	25	240	32	29.92			29.93	FM-15	T	29.88
06	1456	7	SCT:04 27	2.50	HZ:7 FU:05 HZ:05	75	23.9	69	20.3	31	-0.6	20	21	300	24	29.90			29.91	FM-15	T	29.86
06	1458	7	SCT:04 25	1.75	HZ:7 FU:05 HZ:05	76	24.4	70	21.0	31	-0.6	19	24	280	28	29.90				FM-16		29.86
06	1506	7	SCT:04 27	4.00	-RA:02 RA:61	76	24.4	70	21.3	30	-1.1	18	17	280		29.90				FM-16	T	29.86
06	1556	7	CLR:00	10.00		76	24.4	72	22.0	27	-2.8	16	20	300	25	29.90	5	+0.02	29.91	FM-15	T	29.86
06	1609	7	CLR:00	10.00	-RA:02 RA:61	75	23.9	69	20.5	30	-1.1	19	23	290		29.91				FM-16	T	29.87
06	1656	7	SCT:04 25	7.00	-RA:02 RA:61	72	22.2	64	18.0	32	0.0	23	20	280		29.91			29.92	FM-15	T	29.87
06	1756	7	CLR:00	10.00		68	20.0	60	15.6	31	-0.6	25	16	280		29.93			29.93	FM-15	T	29.89
06	1856	7	CLR:00	10.00		63	17.2	55	12.5	33	0.6	33	15	270		29.92	0	-0.01	29.92	FM-15	0.00	29.88
06	1956	7	CLR:00	10.00		63	17.2	55	12.7	30	-1.1	29	14	260		29.93			29.93	FM-15	0.00	29.89
06	2056	7	CLR:00	10.00		60	15.6	52	11.0	36	2.2	41	9	270		29.94			29.94	FM-15	0.00	29.90
06	2156	7	CLR:00	10.00		59	15.0	51	10.5	36	2.2	42	15	260	21	29.96	3	-0.05	29.97	FM-15	0.00	29.92
06	2256	7	CLR:00	10.00		59	15.0	51	10.5	36	2.2	42	7	280		29.97			29.98	FM-15	T	29.93
06	2356	7	CLR:00	10.00		58	14.4	50	10.0	33	0.6	39	5	250		29.97			29.97	FM-15	0.00	29.93